

No. 765,912.

PATENTED JULY 26, 1904.

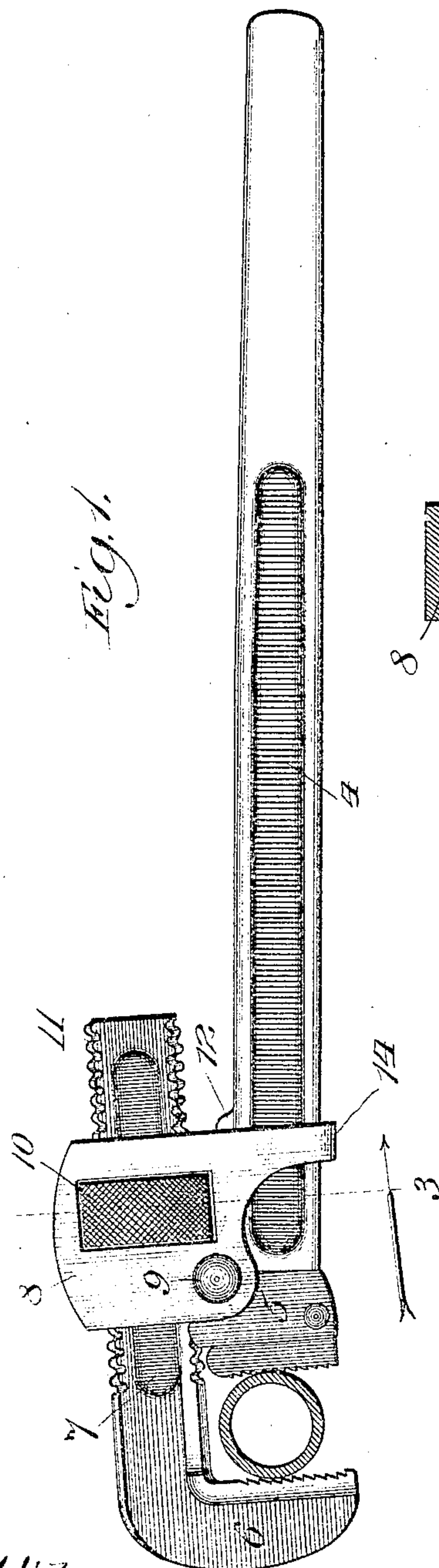
H. L. BORDWELL.

WRENCH.

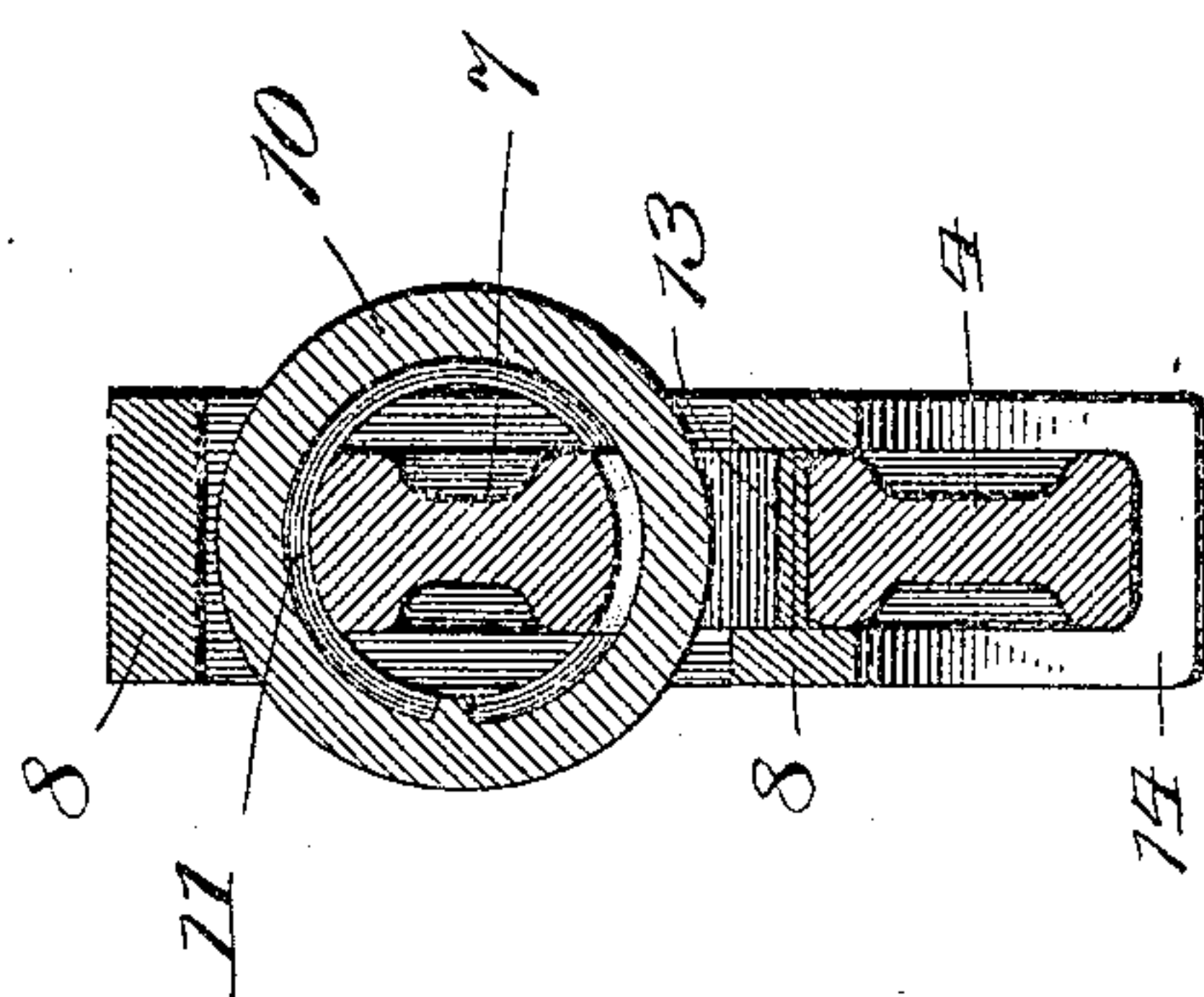
APPLICATION FILED MAR. 23, 1903.

NO MODEL.

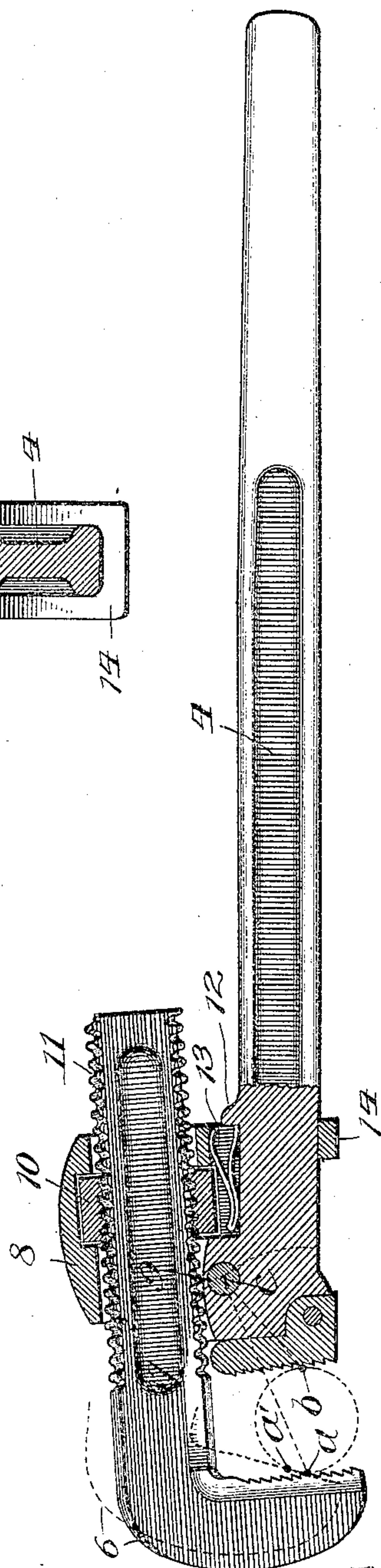
*Fig. 1.*



*Fig. 3.*



*Fig. 2.*



*Witnesses:*  
*Geo. E. Taylor,*  
*Geo. C. Brown.*

*Inventor:*  
*Harry L. Bordwell*  
*by atty Paul Synnestvedt*



# UNITED STATES PATENT OFFICE.

HARRY L. BORDWELL, OF CHICAGO, ILLINOIS.

## WRENCH.

SPECIFICATION forming part of Letters Patent No. 765,912, dated July 26, 1904.

Application filed March 23, 1903. Serial No. 149,236. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY L. BORDWELL, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Wrenches, of which the following is a specification.

My invention relates generally to wrenches for holding or turning pipes, nuts, etc., but particularly to that form of wrench used for obtaining a grip upon a round pipe or other like objects. It is intended to improve specifically the type of pipe wrench in which one of the gripping jaws is mounted indirectly upon a pivot so that the thrust of the handle will operate to cause the two jaws to approach each other in order to get the necessary pressure upon the pipe. The object of the invention is to improve the construction and operation of such a wrench, and to obtain certain advantages in the arrangement and design of parts, as will hereinafter appear.

I have illustrated the essentials of my construction in preferred form in the accompanying drawing, wherein,—

Figure 1 is a side elevation of the wrench shown as embracing a section of pipe.

Figure 2 is a central vertical section through the housing of the movable jaw shown in Figure 1.

Figure 3 is a cross section of the device taken on line 3 in Figure 1.

In wrenches of the kind described there is a handle 4 provided with a head 5 having a clutching face to operate upon the pipe, and having pivoted by a pin 9 a casing 8 which contains the movable jaw 7 provided with a gripping head 6. The movable jaw 7 is adjusted in position to engage the pipe by means of the operation of the nut 10 upon the threads 11, as shown in Figure 1.

In operation, as indicated in Figure 2, the wrench is placed upon the pipe in a position wherein the head 6 is tilted up at an angle, and when pressure is brought downward upon the handle 4 it is plain that a motion of the point marked *c* in the diagram thereon will take place about the point *b*, by which the gripping face of the movable head will roll upon

the pipe from *a'* to *a*, and that this relative motion of the points *c*, *b*, and *a* in the direction indicated will have the effect of bringing the two gripping faces of the wrench together, that is to say, lessening the distance between *a* and *b*; and by this means the pipe is brought under compression in order to give a perfect hold thereon.

In order to insure the movable head taking easily upon the pipe it is generally provided with a spring which will tip it forward, or downward in Figure 2. In the ordinary construction however, the relative downward motion of the handle 4 is resisted only by the compression upon the pipe between the two faces and the result is that the pipe is frequently crushed for this reason. Some wrenches have been provided with a stop upon each side of the handle to prevent the motion of the movable head from being carried so far as to crush the pipe; but the action is not positive. In the present invention I have provided for this by designing the casing 8 with a loop 14 which extends underneath the handle of the wrench and by abutting against the handle just when the faces of the gripping jaws are parallel, preventing any further angular motion between the pivot points *a*, *b*, and *c* marked on Figure 2, and therefore provides for a fixed amount of compression upon the pipe and allows no more than this amount. It also takes the strain of twisting the pipe to the handle directly, and avoids the necessity of resisting this strain by the crushing resistance of the pipe itself, as is usually the case.

Upon the handle 4 of the wrench I provide a pocket by making an abutment back of the pivoting point 9 of the housing and providing a lug 12 on the handle. Inside of the lug 12 I supply a bent lapping spring 13 of the peculiar form shown in Figure 2. It has an upward bend in the bottom lap, and for a part of the length the two laps are in contact; it is also so designed that it touches the housing above at a point between the two contact points on the bottom so that it is held in place without the necessity of any rivet or other fastening to the handle. The contact of the lapped parts avoids danger of breaking and gives a



greater range of flexure. This form of spring has the advantage of being easily slipped into place in its pocket and of holding itself therein automatically by means of the lug 12, and  
5 also by reason of the peculiar form of the spring it has a beneficial action in producing a varient upward pressure on the casing 8 in order to cause the wrench to take hold firmly and evenly upon the pipe as soon as the wrench  
10 is applied.

On the movable jaw 7 I prefer to form the threads 11 of the rounded section shown for various reasons, among others it makes an easier operating thread and a smooth surface  
15 so that it will not injure the hand in handling.

The form of the housing or screw nut mounting 8 makes it easy to slip it over the handle of the wrench in order to put it in place and enables the spring 13 to be easily  
20 inserted in the place and securely held therein. The advantages of the device will readily occur to those familiar with its use. Thus the fact that the action of the spring tends to keep the jaws always parallel very much fa-  
25 cilitates the removal of the wrench from the pipe, because the jaws not converging the pipe is not wedged in place as in the constructions where the spring tends to hold the jaws at an angle to each other. This easy release  
30 action is also much aided by the powerful spring used and by the fact that the spring at 13 bears upon a part of the housing and not upon the shank 7 itself, as is customary where such springs have been used.

35 Having thus described my invention and

illustrated its use, what I claim, and desire to secure by Letters Patent, is the following:

1. In a pipe wrench the combination of a handle having a notch therein near the pivot for the jaw and an abutment on the handle  
40 opposite the end of the jaw, a pivoted housing for the movable member having a cross-bar over said notch in the handle, and forming three sides of a practically closed chamber for the spring and a folded compression spring  
45 adapted to be self retained in said pocket formed by the handle and housing, substantially as described.

2. In a pipe wrench in combination with a pivoted housing carrying a movable gripping  
50 jaw, a handle having an abutment and a lug under said housing forming a pocket, and a flat bent spring having its free arms partly in contact to operate on said housing, substan-  
55 tially as described.

3. A pipe wrench having a retractile jaw mounted in a pivoted housing in combination with a handle having an abutment just out-  
side said housing and a generally V-shaped spring resting on the handle at two points in-  
60 side the abutment and under the housing whereby it is self-retained in position.

In testimony whereof I have hereunder signed my name in the presence of the two subscribed witnesses.

HARRY L. BORDWELL.

Witnesses:

PAUL CARPENTER,  
EDWARD C. BURNS.